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Environmental Technology Verification Test Plan

General Ventilation Filters

Prepared by

Research Triangle Institute

Under a Cooperative Agreement with

U.S. Environmental Protection Agency

ETV ETV ETV

Notice

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ENVIRONMENTAL TECHNOLOGY VERIFICATION TEST PLAN

GENERAL VENTILATION FILTERS

Prepared by

Research Triangle Institute
Research Triangle Park, NC

EPA Cooperative Agreement No. CR 822870-01

Project Officer: Leslie E. Sparks
National Risk Management Research Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC

ACRONYMS/DEFINITIONS

ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
EPA	Environmental Protection Agency
ETV	Environmental Technology Verification
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RTI	Research Triangle Institute

1 PURPOSE AND OBJECTIVES

The purpose of this program is to perform the verification tests for the general ventilation filter pilot. The objectives are to:

1) perform limited inter-laboratory tests of a set of filters and

2) publish a limited set of test results.

2 APPROACH

RTI will follow the ETV Test Protocol for General Ventilation Filters and ETV Quality Assurance Project Plan (QAPP) for General Ventilation Filters. RTI will manage the test and distribute the test filters to the laboratories.

3 TEST MATRIX

The following test matrix will be used in the study. Each lab will test three filters of each of the three types, for a total of nine tests. The total number of tests will be N*9, where N is the number of laboratories performing the tests. RTI expects one or two other labs, in addition to RTI, to qualify for performing testing. In addition, industry laboratories may also run the test.

	Laboratory				
	RTI	Lab 1	Lab 2	Lab n	
Medium Efficiency ASHRAE (30% dust spot)	3	3	3	3	*12*
High Efficiency ASHRAE (95% dust spot)	3	3	3	3	*12*
Electrostatic charged fiber filter (med. to high)	3	3	3	3	*12*
Total	*9*	*9*	*9*	*9*	**36**

The three types of filters were chosen to challenge the test method. A medium efficiency ASHRAE filter is a fairly stringent test of the method because of the low efficiency at the most penetrating particle diameter and steep slope of the curve. The use of a high efficiency filter tests the method at the product near the upper limit. An electrostatic charged fiber filter will be used to evaluate the "conditioning" step reported in the ETV program. The use of triplicates will allow replication within and between labs. These filters will be randomly selected from one batch (box).

The test matrix will generate a number of different test results for statistical comparison. These include:

Initial efficiency (at each particle diameter)

Pressure drop vs. flow rate.

The efficiency curves after each dust loading

4 QA/QC

Each laboratory will provide a QAPP; RTI will provide a template to guide each laboratory. Each laboratory will be audited during the testing period. US EPA will audit RTI and RTI will audit the other laboratories. The verification report will contain a section on QA.

5 SCHEDULE

Date	Milestone
June	Announce program
July 15, 1998	Labs interested in testing must declare interest
October 1, 1998	RTI send draft protocol and QAPP template to interested labs
October 15, 1998	Labs must submit test duct qualifying data
November 1, 1998	RTI complete review of qualifying data and send filters to test labs
December 1, 1998	Test analysis results sent to RTI
January 22, 1999	Initial review at Stakeholders' Meeting
February 15, 1999	Complete testing
March 1, 1999	Issue verification report and statement

6 OTHER CONSIDERATIONS

Neither the name of the laboratories or make/brand of the test filters will be associated with a test result in the final verification report or statement. The names of the laboratories will be listed as participants.

There will be two tiers of participation:

— Independent test labs
— Informal participation (manufacturers)

Independent test labs have priority and will be subjected to audit.

The costs of the tests will be paid from ETV funds to the independent test laboratories.

Manufacturer labs may participate informally but will not be audited. These labs will not be paid for their tests. They will be informed on how their data compared with the rest.

Test labs with significant operational problems will not be included in the verification statement will be included in the verification report.

7 MANAGEMENT

Mr. J. T. Hanley will manage the General Ventilation Filter test program. The program is part of the Environmental Technology Verification Pilot Program for Indoor Air Products, led by Dr. D. S. Ensor. Mr. Hanley will identify a contact person at each participating laboratory to coordinate testing and audits.

8 REFERENCES

RTI, Environmental Technology Verification Test Protocol for General Ventilation Filters, Draft, Research Triangle Institute, Research Triangle Park, NC. September 1998.

RTI, Environmental Technology Verification Quality Assurance Project Plan for General Ventilation Filters, Draft, Research Triangle Institute, Research Triangle Park, NC. September 1998.